



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/915,921

07/25/2001

Andrew Pickering

TI-31299

9281

23494

7590

11/02/2004

TEXAS INSTRUMENTS INCORPORATED  
P O BOX 655474, M/S 3999  
DALLAS, TX 75265

EXAMINER

FLANAGAN, KRISTA M

ART UNIT

PAPER NUMBER

2631

DATE MAILED: 11/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/915,921	PICKERING ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Krista M. Flanagan	2631	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07/25/2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 and 29 is/are rejected.
- 7) ☐ Claim(s) 28 is/are objected to.
- 8) ☒ Claim(s) 21-27 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>10/01/2001</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-20, 28 and 29, drawn to a signal for transmission and an encoder, classified in class 375, subclass 295.
  - II. Claims 21-27, drawn to a decoder, classified in class 375, subclass 316.
2. The inventions are distinct, each from the other because of the following reasons:
  - a. Group I refers to a transmission means and a transmitter.
  - b. Group II refers to a receiver for receiving data symbols.
3. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Rose A. Keagy on 10/21/2004 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-20, 28 and 29. Applicant, in replying to this Office action, must make affirmation of this election. Claims 21-27 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

### ***Oath/Declaration***

5. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

Art Unit: 2631

It does not identify the foreign application for patent or inventor's certificate on which priority is claimed pursuant to 37 CFR 1.55, and any foreign application having a filing date before that of the application on which priority is claimed, by specifying the application number, country, day, month and year of its filing.

-and-

It was not executed in accordance with either 37 CFR 1.63(a)(1).

### *Specification*

6. The abstract of the disclosure is objected to because page 9, line 28 states, "this would require 2.B<sub>u</sub> input/output pins." This sentence is unclear. Correction is required. See MPEP § 608.01(b).

### *Claim Objections*

7. Claim 28 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only. See MPEP § 608.01(n). Accordingly, the claim has not been further treated on the merits.

8. Claim 2 is objected to because of the following informalities: it is in improper form because a claim should not have dependency upon itself. Examiner believes the claim should depend from claim 1. Appropriate correction is required.

9. Claims 13 and 16 are objected to because of the following informalities:

a. Claim 13, line 2 states "the active signal as current of a first sense". It is believed that the claim should read as "the active signal as a current of a first sense".

b. Claim 16, line 3 states "on the or each remaining terminal". It is the examiner's opinion that the claim should read "on the remaining terminal or on each of the remaining terminals".

Appropriate correction is required.

Art Unit: 2631

9. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

***Claim Rejections - 35 USC § 101***

10. Claims 1-7 are rejected under 35 U.S.C. 101 the claimed invention is directed to non-statutory subject matter. Claims 1-7 claim a signal. A signal does not fall into the category of a method, apparatus, product or composition of matter therefore it is directed toward non-statutory subject matter. The claimed signal is not tangibly embodied and it does not have a clear practical application, therefore it is not statutory.

***Claim Rejections - 35 USC § 102***

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(g)(1) during the course of an interference conducted under section 135 or section 291, another inventor involved therein establishes, to the extent permitted in section 104, that before such person's invention thereof the invention was made by such other inventor and not abandoned, suppressed, or concealed, or (2) before such person's invention thereof, the invention was made in this country by another inventor who had not abandoned, suppressed, or concealed it. In determining priority of invention under this subsection, there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other.

12. Claims 1-5, 8-12, 15-17 and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Wilhelm, UK 2,060,317 A.
13. Regarding claim 1, Wilhelm discloses a signal (See figure 1, block SCN3) for transmitting symbols (see page 2, paragraph 4, lines 1-2) on a set of at least three terminals (See figure 1, blocks B31-B33), the signal comprising for each symbol an active signal on two

Art Unit: 2631

of those channels (See table 4, where an active signal provides voltage units 0 and 2) and an inactive signal on the remaining channel or channels (See table 4, where an inactive signal provides voltage unit 1), the symbols being distinguishable by which two of the channels have the active signals (See figure 1 and table 4).

14. Regarding claim 2, Wilhelm discloses a signal wherein the two active signals are of different form allowing them to be distinguished from each other (See figure 1 and page 3, paragraph 2, lines 4-6, and table 4, where an active signal provides voltage units 0 and 2 and an inactive signal provides voltage unit 1) the symbols being further distinguishable thereby.
15. Regarding claim 3, which inherits the limitations of claim 2, Wilhelm discloses a signal wherein one of the active signals is an electrical signal at a first voltage level and the other is an electrical signal at a second voltage level. (See figure 1 and page 3, paragraph 2, lines 4-6, and table 4, where an active signal provides voltage units 0 and 2 (different first and second active voltage levels) and an inactive signal provides voltage unit 1).
16. Regarding claim 4, which inherits the limitations of claim 3, Wilhelm discloses a signal wherein the inactive signal or signals is an electrical signal at a voltage level intermediate to the first and second voltage levels (See figure 1 and page 3, paragraph 2, lines 4-6, and table 4, where an active signal provides voltage units 0 and 2 and an inactive signal provides voltage unit 1, where 1 is intermediate to 0 and 2).
17. Regarding claim 5, which inherits all of the limitations of claim 4, Wilhelm discloses a signal wherein the inactive signal is at a voltage level substantially half-way between the first and second voltage levels (See figure 1 and page 3, paragraph 2, lines 4-6, and table 4, where

Art Unit: 2631

an active signal provides voltage units 0 and 2 and an inactive signal provides voltage unit 1, where 1 is half-way between to 0 and 2).

18. Regarding claim 8, Wilhelm discloses an encoder (See figure 1, block SCN3) for transmitting data symbols (see page 2, paragraph 4, lines 1-2) from a set of at least three terminals (See figure 1, blocks B31-B33), the encoder being arranged to provide for each of the symbols an active signal on two of the terminals (See table 4, where an active signal provides voltage units 0 and 2) of the set while providing an inactive signal on the remaining terminal or terminals of the set (See table 4, where an inactive signal provides voltage unit 1).

19. Regarding claim 9, which inherits the limits of claim 8, Wilhelm discloses an encoder wherein the encoder is arranged to provide the two active signals in different form allowing them to be distinguished from each other (See figure 1 and page 3, paragraph 2, lines 4-6, and table 4, where an active signal provides voltage units 0 and 2 and an inactive signal provides voltage unit 1).

20. Regarding claim 10, which inherits the limitations of claim 9, Wilhelm discloses an encoder arranged to provide one of the active signals as an electrical signal at a first voltage level and the other active signal as an electrical signal at a second different voltage level. (See figure 1 and page 3, paragraph 2, lines 4-6, and table 4, where an active signal provides voltage units 0 and 2 (different first and second active voltage levels) and an inactive signal provides voltage unit 1).

21. Regarding claim 11, which inherits the limitations of claim 10, Wilhelm discloses an encoder arranged to provide the inactive signal or signals as an electrical signal at a voltage level intermediate to the first and second voltage levels of the active signals (See figure 1 and

Art Unit: 2631

page 3, paragraph 2, lines 4-6, and table 4, where an active signal provides voltage units 0 and 2 and an inactive signal provides voltage unit 1, where 1 is intermediate to 0 and 2).

22. Regarding claim 12, which inherits all of the limitations of claim 11, Wilhelm discloses an encoder wherein the inactive signal is at a voltage level substantially half-way between the first and second voltage levels (See figure 1 and page 3, paragraph 2, lines 4-6, and table 4, where an active signal provides voltage units 0 and 2 and an inactive signal provides voltage unit 1, where 1 is half-way between to 0 and 2).

23. Regarding claim 15, which inherits all of the limitations of claim 9, Wilhelm discloses an encoder (See figure 1, block SCN3) comprising first and second sets of switches (See figure 1, blocks GTS1-3: T1 and T2), one switch from each of the first and second sets being connected to a respective one of the terminals (See figure 1, blocks GTS1-3: T1), the encoder being arranged to activate a selected one of the first set of switches in order to provide one of the active signals on the terminal to which that switch is connected and the encoder arranged to activate a selected one of the second set of switches in order to provide the other active signal on a terminal to which that switch is connected (See figure 1 and page 3, paragraph 2, lines 4-6, and table 4, where an active signal provides voltage units 0 and 2 and an inactive signal provides voltage unit 1).

24. Regarding claim 16, which inherits all of the limitations of claim 15, Wilhelm discloses an encoder wherein the remaining switches are inactive (which could be interpreted as voltage/current unit 0, where the voltage/current ranges from  $-n$  to  $+n$ ) in order to provide an inactive signal on the remaining terminal or terminals.



Art Unit: 2631

25. Regarding claim 17, which inherits all of the limitations of claim 15 or claim 16, Wilhelm discloses an encoder wherein each switch in the first set of switches (See figure 1, blocks GTS1-3: T1 and B31-B33), is coupled to a first voltage level and each switch in the second set of switches is coupled to a second voltage level (See figure 1, blocks GTS1-3: T2 and VR).
26. Claims 19 and 20 are rejected under 35 U.S.C. 102(g) as being clearly anticipated by prior art, figures 1 and 2, referenced in your application.
27. Regarding claim 19, which inherits the limitations of claim 15, prior art discloses an encoder wherein each terminal of the encoder is coupled, via a resistor (figures 1 and 2, blocks 7 and 8), to a common node (See figures 1 and 2, block 9 and page 1, lines 19-21).
28. Regarding claim 20, which inherits the limitations of claim 19, prior art discloses an encoder wherein the common node is at a/the voltage level intermediate to the voltage levels on the terminals carrying the first and second active signals (See figures 1 and 2, blocks 7-9 and page 1, lines 23-26).
29. Regarding claim 29, Wilhelm discloses a method of transmitting data comprising encoding it as a series of symbols using the signal of claim 1. (See figure 1 and rejection of claims 1 and 8)

***Claim Rejections - 35 USC § 103***

30. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2631

31. Claims 6-7, 13-14 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilhelm, UK 2,060,317 A.

32. Regarding claims 6 and 7, which inherits the limitations of claim 2, Wilhelm discloses a signal wherein the two active signals are of different form allowing them to be distinguished from each other (See figure 1 and page 3, paragraph 2, lines 4-6, and table 4, where an active signal provides voltage units 0 and 2 and an inactive signal provides voltage unit 1) the symbols being further distinguishable thereby. Wilhelm does not expressly disclose a signal wherein one of the active signals is provided as a current of a first sense and the other active signal as a current of a second sense, the first and second sense being opposite to each other wherein the inactive signal has a current that is substantially zero. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use a current signal source instead of a voltage signal source. Having the active voltage levels at  $-n$  and  $+n$  with an inactive or intermediate level at zero would be the same as having a current of a first sense and the other active signal as a current of a second sense, the first and second sense being opposite to each other wherein the inactive signal has a current that is substantially zero. One of ordinary skill in the art would have been motivated to do this because use of a current signal versus a voltage signal is a design choice and does not change the functionalities of the claims.

33. Regarding claims 13 and 14, which inherit all of the limitations of claim 9, Wilhelm discloses an encoder wherein the encoder is arranged to provide the two active signals in different form allowing them to be distinguished from each other (See figure 1 and page 3, paragraph 2, lines 4-6, and table 4, where an active signal provides voltage units 0 and 2 and an inactive signal provides voltage unit 1). Wilhelm does not expressly disclose an encoder

Art Unit: 2631

arranged to provide one of the active signals as current of a first sense and the other active signal as a current of a second sense, the first and second senses being opposite to one another wherein the inactive signal or signals are provided by not actively providing a current signal on the remaining terminal or terminals. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use a current signal source instead of a voltage signal source. Having the active voltage levels at  $-n$  and  $+n$  with an inactive or intermediate level at zero would be the same as having active current levels that travel in opposite directions with an intermediate at the same, zero. One of ordinary skill in the art would have been motivated to do this because use of a current signal versus a voltage signal is a design choice and does not change the functionalities of the claims.

34. Regarding claim 18, which inherits the limitations of claim 15 or claim 16, Wilhelm discloses an encoder wherein each switch in the first set of switches is coupled to a first source (See figure 1, blocks GTS1-3: T1 and B31-B33) and each switch in the second set of switches is coupled to a second source (See figure 1, blocks GTS1-3: T2 and VR). Wilhelm does not expressly teach that the source is a current source. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use a current signal source instead of a voltage signal source. Having the active voltage levels at  $-n$  and  $+n$  with an inactive or intermediate level at zero would be the same as having active current levels that travel in opposite directions with an intermediate at the same, zero. One of ordinary skill in the art would have been motivated to do this because use of a current signal versus a voltage signal is a design choice and does not change the functionalities of the claims.

Art Unit: 2631

35. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Abramson et al, US Patent No. 5,635,862 discloses a high-speed block encoder circuit.

b. Nishida, US Patent No. 6,229,472 discloses an A/D converter.


37. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krista M. Flanagan whose telephone number is (571) 272-2203.

The examiner can normally be reached on Monday - Friday, 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

kmf  
20041027

  
TESEALOF BOURE  
PRIMARY EXAMINER